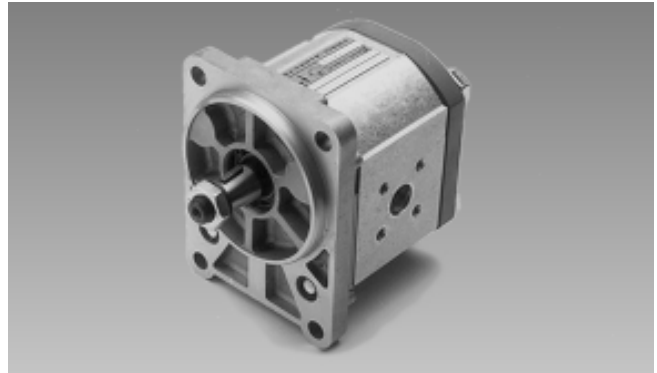


MANNESMANN REXROTH	Gear Pump Model G2 (Series 4X) For Flange Mounting with SAE threaded Ports			RA 10 030/2.95 Replaces: 2.92
	Sizes 4 to 22	... 3600 PSI (250 bar)	... 1.37 in ³ /rev. (22.4 cm ³ /rev.)	

- New principle of sealing the pump body, increases service life
- Long seal life, even at maximum temperatures
- Sleeve bearings for long life
- Single block bearings
- Heavy duty construction
- Innovative principle of hydrostatic compensation

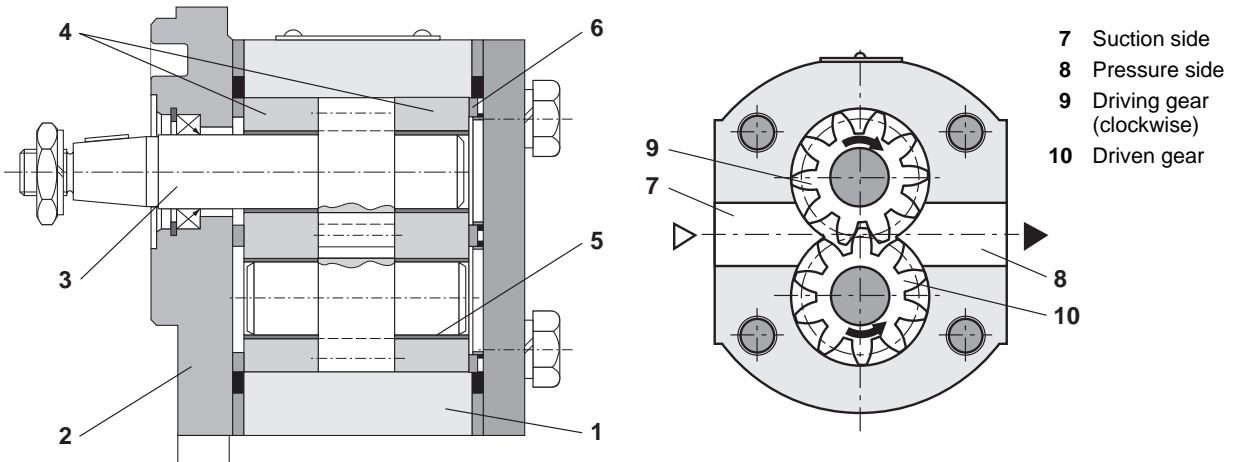


R 85/103
1 PF 2 G2-4X/...RR 12 MR

Functional description

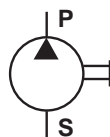
Hydraulic pumps, model G2, are self-priming, external gear pumps. Applicable to 3600 PSI (250 bar), these fixed displacement pumps provide flow to operate hydraulic circuits. Consisting of housing (1), mounting flange (2), drive shaft (3), bearing blocks (4), sleeve bearings (5), and hydrostatic compensation plates (6). G2 series gear pumps are designed to handle the rigors of industrial use.

Rotation of the gears creates a void at the suction inlet (7). Fluid trapped in the gear roots is transported to the pressure port (8). This merging of fluid creates flow, which reflects a pressure signal as a result of load forces. As evident by the cross-section, any void created at the suction inlet will immediately be replaced by reservoir fluid. To enhance smooth performance, a small volume of load-pressurized-fluid is needed to aid in internal lubrication.

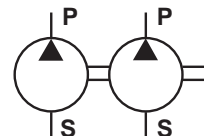


Symbols

Single pump



Tandem pump



Ordering code

1	PF	2	G2	-	4X	/			R	R	12	M	R			*
---	----	---	----	---	----	---	--	--	---	---	----	---	---	--	--	---

Series 40 to 49 = 4X
(40 to 49, externally interchangeable)

Displacement	Size	
0.24 in ³ /rev (4.0 cm ³ /rev)	4	= 004
0.34 in ³ /rev (5.5 cm ³ /rev)	5	= 005
0.50 in ³ /rev (8.2 cm ³ /rev)	8	= 008
0.67 in ³ /rev (11.0 cm ³ /rev)	11	= 011
0.86 in ³ /rev (14.1 cm ³ /rev)	14	= 014 ¹
0.99 in ³ /rev (16.2 cm ³ /rev)	16	= 016
1.16 in ³ /rev (19.0 cm ³ /rev)	19	= 019
1.37 in ³ /rev (22.4 cm ³ /rev)	22	= 022

Clockwise = R*
Counter-clockwise = L

Splined shaft SAE-A 5/8", 9 teeth = R*
Tapered shaft 1:5 Ø 17 mm = C
Tongued shaft with coupling for single pump, center or rear pump = N
Tapered shaft 1:5 Ø 20 mm for use with additional front bearing = S
Keyed shaft, 18 mm Ø³ = A

¹ Size 14 - special order, only on request

Sample order codes for single pumps

1 PF 2 G2-4X/005 RR 12 MR
(front pump only)
1 PF 2 G2-4X/016 RR 12 MRK
(rear pump only)
1 PF 2 G2-4X/008 LN 12 MDL

Ordering code for combination pump G2/008 + G2/004

Sample order code for multiple pumps

1 PF 2 G2-4X/008 RR 12 MRK
1 PF 2 G2-4X/004 LN 12 MDL

Multiple pumps are delivered completely assembled. The components allowing for this assembly are, however, to be shown as separate items within the order (see sample order).

It is possible to order combination parts singularly. For details, see the sample order for multiple pumps.

The kit consists of: two tie rods, two washers and two nuts. The coupling is included with the rear or center pump.

Ordering code for combination pump G2/022 + G2/011 + G2/005

1 PF 2 G2-4X/022 RR 12 MRK +
1 PF 2 G2-4X/011 LN 12 MDN +
1 PF 2 G2-4X/005 LN 12 MDL

Further details to be written in clear text

* no desig = Single pump
K = Front pump of combination
L = Rear pump of combination
N = Center pump of combination

* R = SAE-A, 2-bolt – 3.25" (82.5 mm) pilot
B = rectangular flange – 80 mm pilot
P = 2-bolt mounting – 50 mm pilot
M = 2-bolt mounting – 52 mm pilot
A = front bearing assembly – 80 mm pilot
D = Combination flange for G2 + G2 (Rear and Center pumps only)
H = combination flange when mounting G2 to larger pumps – G3, G4, R4 (Rear and Center Pumps only)

* M = Buna-N seals up to 176 °F (80 °C)
K = FPM Shaft Seal, other seals in Buna-N (for connection to diesel engine)

* 12² = SAE Straight threaded ports (only available with SAE splined shaft and mounting)
20 = Square metric flange "B" design
01 = BSP thread port³

- For splined coupling, see PU-A 33-18
- For pump mounting brackets, see RA 45 525
- For metric flanges, see RA 45 520
- * Typical Stock: 1 PF 2 G2-4X/...RR 12 MR
- ² See chart below for fluid port dimensions
- ³ Shaft type "A" only with "01" ports

Fluid port dimensions for Port Code 12

Size	Dimensions in inches (mm)		P	S	Weight lbs (kg)
	A	B			
004	3.58 (91)	1.75 (44.5)	SAE-10; 7/8-14	SAE-10; 7/8-14	7.7 (3.5)
005	3.58 (91)	1.75 (44.5)	SAE-10; 7/8-14	SAE-10; 7/8-14	7.9 (3.6)
008	3.68 (93.5)	1.80 (45.75)	SAE-10; 7/8-14	SAE-12; 11/16-12	7.9 (3.6)
011	3.86 (98)	1.89 (48)	SAE-10; 7/8-14	SAE-12; 11/16-12	8.3 (3.8)
014	4.02 (102)	1.97 (50)	SAE-10; 7/8-14	SAE-12; 11/16-12	8.3 (3.8)
016	4.13 (105)	2.03 (51.5)	SAE-10; 7/8-14	SAE-12; 11/16-12	8.8 (4.0)
019	4.29 (109)	2.11 (53.5)	SAE-10; 7/8-14	SAE-12; 11/16-12	8.8 (4.0)
022	4.65 (118)	2.28 (58)	SAE-10; 7/8-14	SAE-12; 11/16-12	9.6 (4.4)

Technical data (for application outside these parameters, please consult us!)

Hydraulic fluid: Petroleum oils to data sheet RA 07 075

Maximum degree of fluid contamination:

Class 19/16, according to ISO 4406. Therefore, we recommend a filter with a minimum retention rate of $\beta_{20} \geq 100$.

(For longer life, we recommend class 18/15, achievable with a filter $\beta_{10} \geq 100$.)

Fluid temperature range: 5 to 176 °F (– 15 to 80 °C)

Ambient temperature range: 5 to 140 °F (– 15 to 60 °C)

Viscosity range: 60 to 1400 SUS (10 to 300 mm²/s (recommended) 4640 SUS (1000 mm²/s) maximum start viscosity)

Drive connection: Flexible coupling, for other types of drive, please consult us

Installation position: Optional

Direction of rotation: Either*

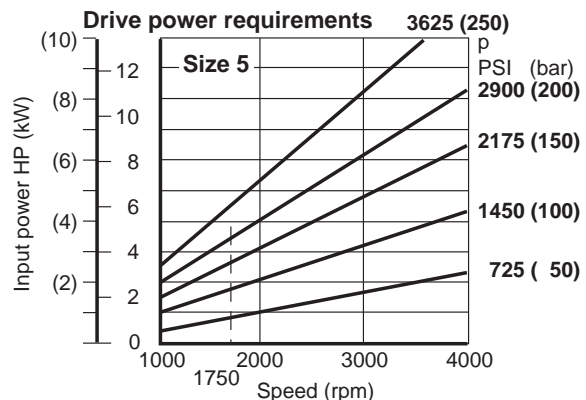
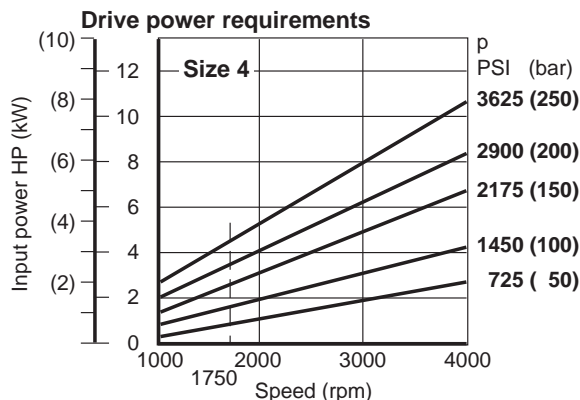
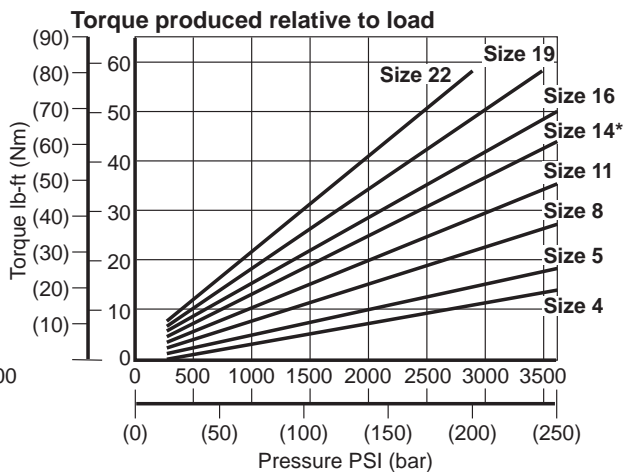
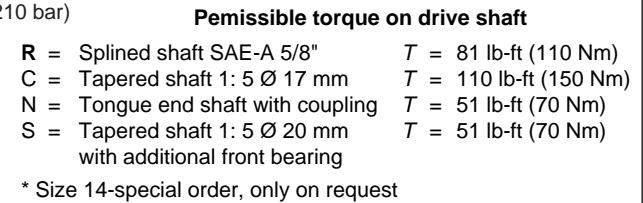
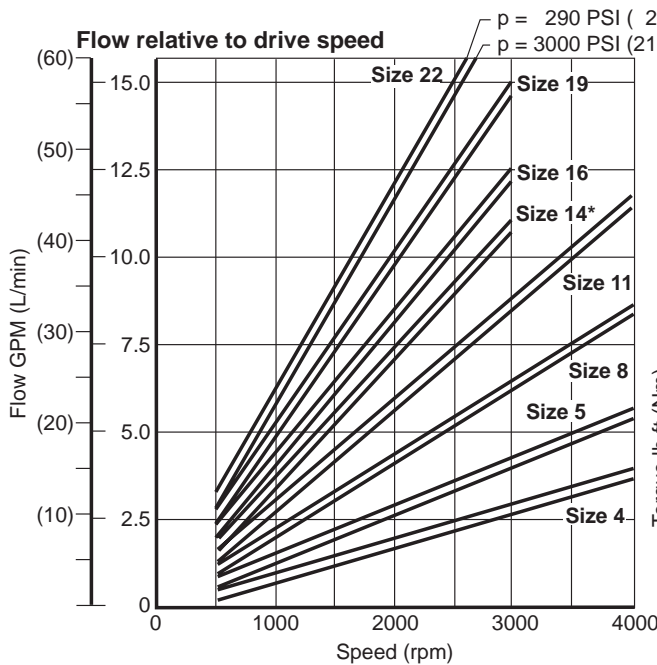
*Pumps may only rotate in the direction specified by model code

Weights: see table for individual pump weights

Size		4	5	8	11	14*	16	19	22
Displacement	in ³ /rev. (cm ³ /rev.)	0.24 (4.0)	0.34 (5.5)	0.50 (8.2)	0.67 (11.0)	0.86 (14.1)	0.99 (16.2)	1.16 (19.0)	1.37 (22.4)
Inlet pressure range (absolute)		$p_{abs\ min}$ 10.3 PSIA (0.7 bar) ... $p_{abs\ max}$ 43.5 PSIA (3.0 bar)							
Max. continuous pressure P1	PSI (bar)	3625 (250)	3625 (250)	3625 (250)	3625 (250)	3625 (250)	1625 (250)	3480 (240)	3045 (210)
Peak pressure	PSI (bar)	3990 (275)	3990 (275)	3990 (275)	4350 (300)	4350 (300)	4350 (300)	3990 (275)	3625 (250)
Max. speed at cont. pressure P1	rpm	5000	4000	4000	4000	3500	3000	3000	2500
Min. speed at p = 2610 PSI (180 bar)	rpm	1000	1000	700	500	500	500	500	500
Min. speed at P1	rpm	1200	1200	1000	700	700	700	700	700

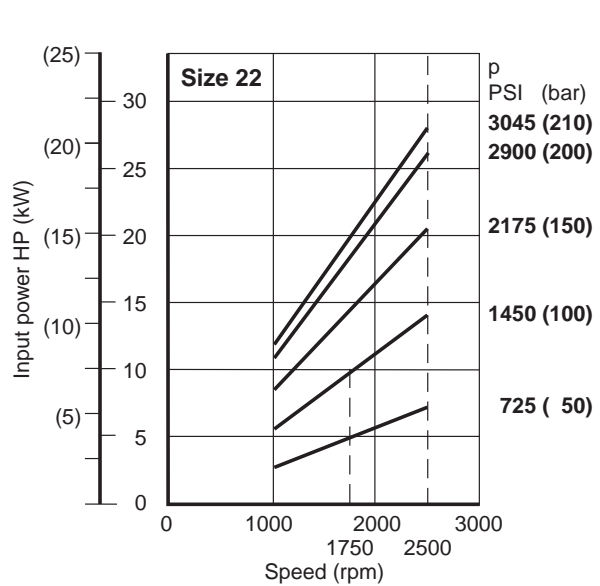
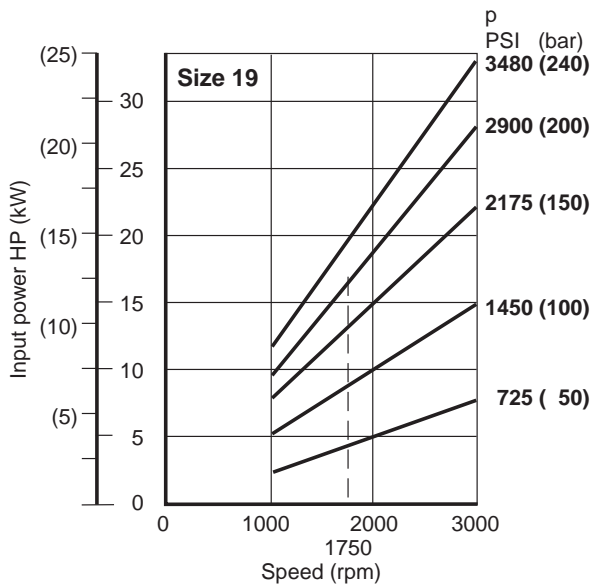
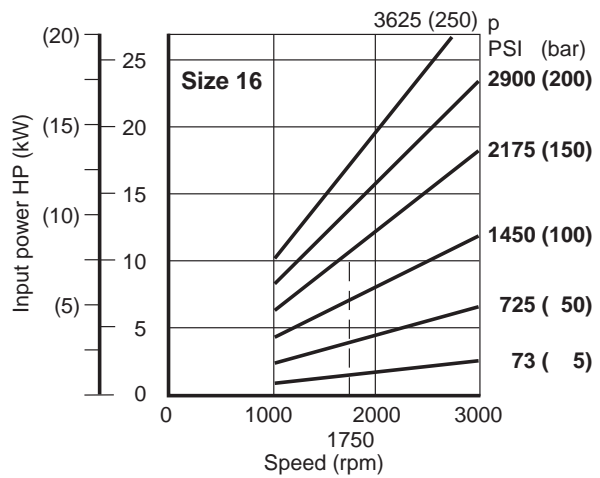
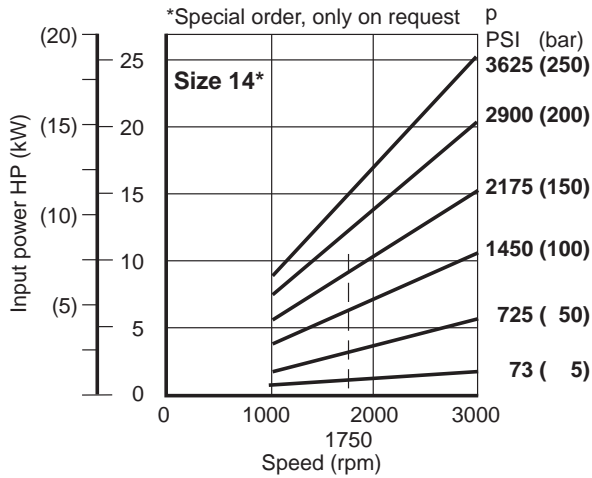
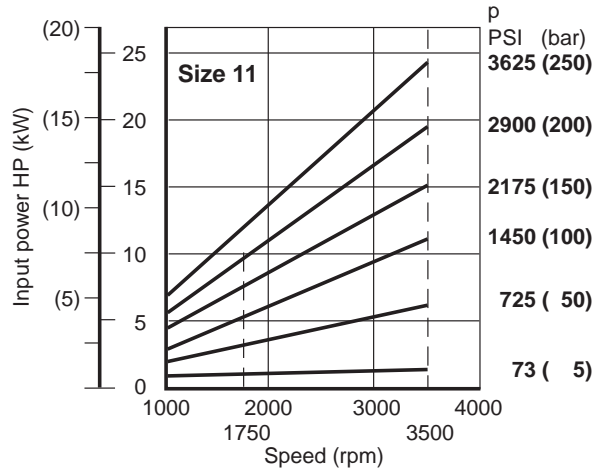
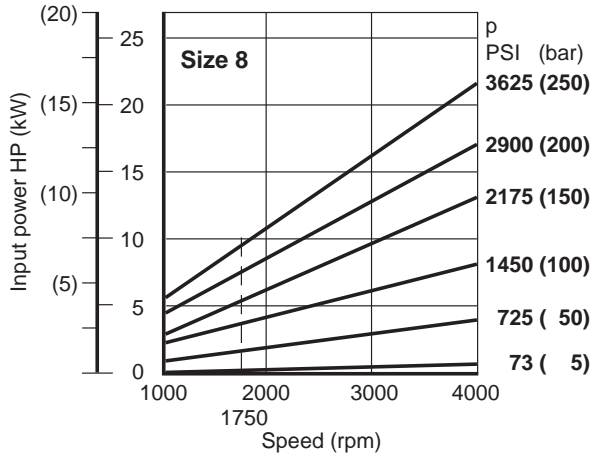
* size 14 - special order, only on request

Operating curves, measured at $v = 190$ SUS (41 mm²/s) and $t = 122$ °F (50 °C)



Operating curves, measured at $v = 190 \text{ SUS}$ ($41 \text{ mm}^2/\text{s}$) and $t = 122 \text{ }^\circ\text{F}$ ($50 \text{ }^\circ\text{C}$)

Charts define torque produced as a result of load pressure and drive speed.



Noise level, measured at $n = 1450$ rpm, $v = 190$ SUS ($41 \text{ mm}^2/\text{s}$) and $t = 122 \text{ }^\circ\text{F}$ ($50 \text{ }^\circ\text{C}$)

PSI (bar)	Size	4	5	8	11	(14)*	16	19	22
72 (5)		57	59	59	59	62	62	62.5	62
725 (50)		58.5	60	60	60	64	66.5	67	66
1450 (100)		59	61	61	62	65.5	68	69.5	67
2175 (150)		60	62	62	64.5	66.5	69	70.5	68.5
2900 (200)		61	63	63.5	66	68	69.5	70	69
3625 (250)		61.5	64.5	65	68	69.5	70.5	71	—

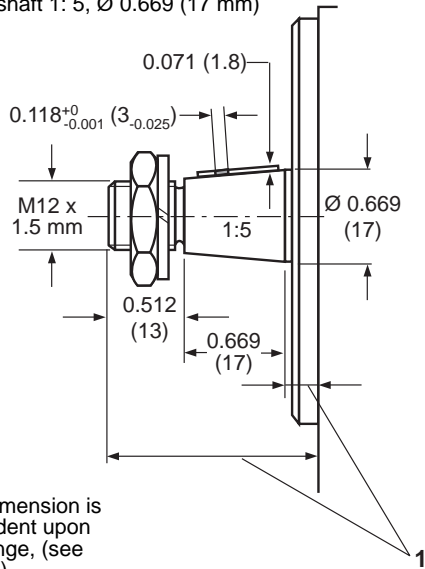
Note:
 Noise level is dependant on pump speed
 measured in an anechoic chamber to DIN 45635,
 distance of microphone to pump = 3.28 ft (1m)

*Size 14 – special order, only on request

Shaft ends: dimensions in inches (millimeters)

C

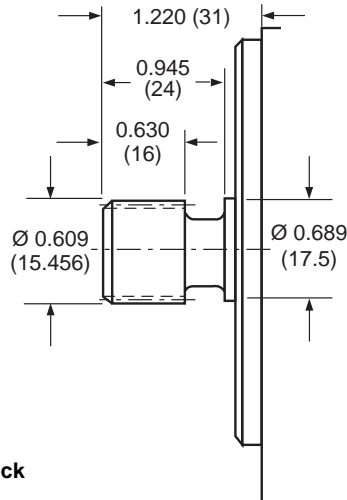
Tapered shaft 1: 5, $\varnothing 0.669$ (17 mm)



1 This dimension is dependent upon the flange, (see page 6)

R*

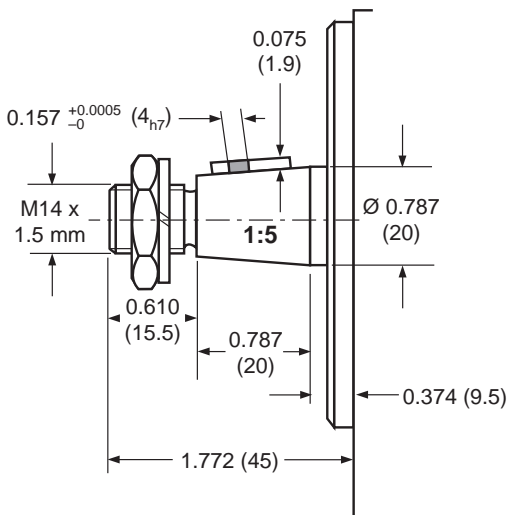
5/8" SAE-A splined shaft, 9T 16/32 DP and tooth thickness
 $t = 0.0982^{+0}_{-0.0012}$ (2.357 -0.030)



* Typical Stock

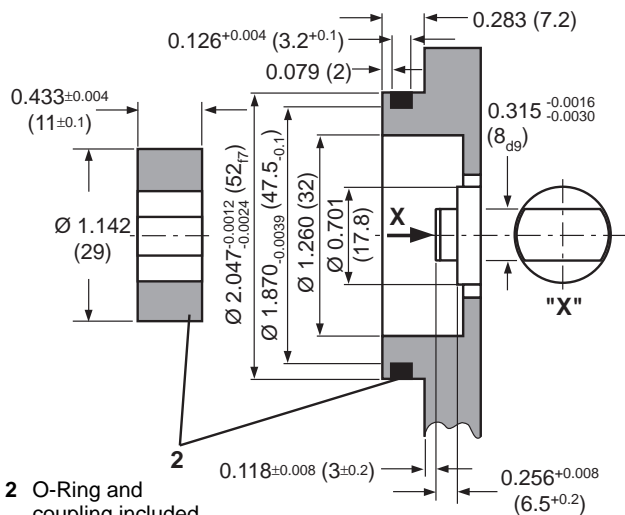
S

Tapered shaft 1: 5, $\varnothing 0.787$ (20 mm) for extra front bearing



N

Tongued shaft with coupling for center and rear pumps

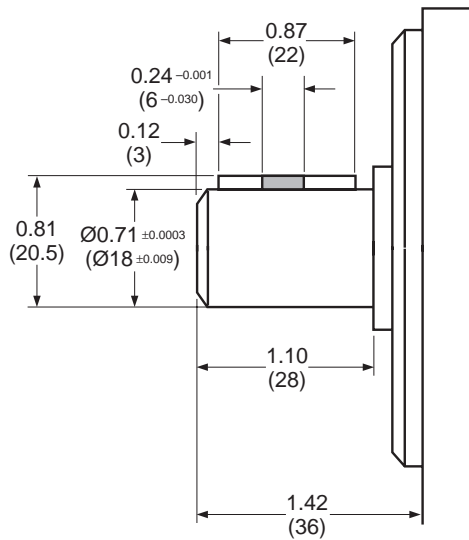


2 O-Ring and coupling included in supply

Shaft: dimensions in inches (millimeters)

A

Cylindric shaft ISO \varnothing 18 mm



Shaft end: dimensions in inches (millimeters)

1 PF 2 G2-4X/... R A 01 MB

Size (see table)

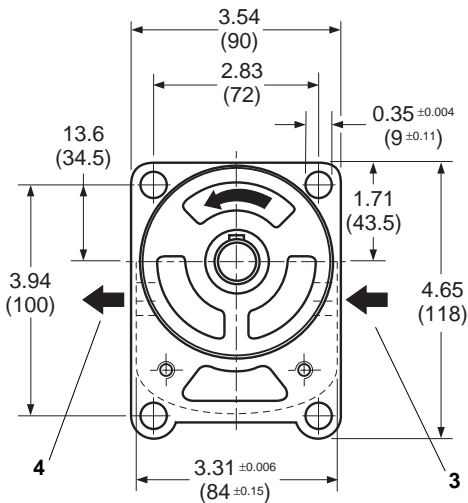
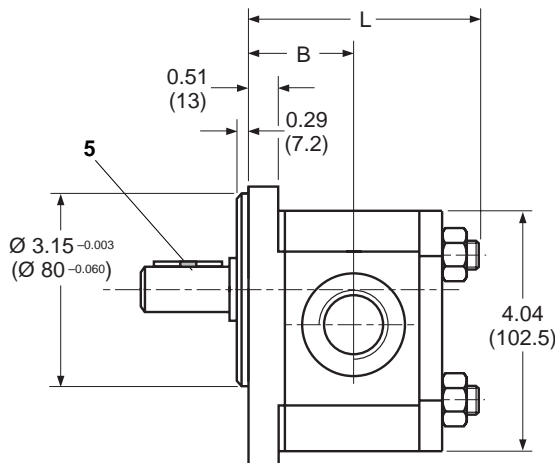
Direction of rotation:

Clockwise = R

Counter-clockwise = L

Keyed shaft
 \varnothing 18 mm

Size	Dimensions in inches (mm)		Ordering code		Weight lbs (kg)
	L	B	clockwise	counter-clockwise	
004	3.46 (88)	1.66 (42.25)	530 566	530 567	5.9 (2.7)
005	3.66 (93)	1.63 (41.50)	530 568	530 569	5.9 (2.7)
008	3.90 (99)	1.78 (45.25)	530 570	530 571	6.3 (2.8)
011	3.86 (98)	1.86 (47.25)	530 572	530 573	6.6 (3.0)
016	4.25 (108)	1.93 (49.00)	530 574	530 575	6.6 (3.0)
022	4.65 (118)	2.19 (55.50)	530 576	530 577	7.7 (3.5)



3 Suction side
4 Pressure side

5 Keyed shaft
 \varnothing 18 mm

Direction of rotation: counter-clockwise (model "L") viewed from end of drive shaft.
For clockwise rotation (model "R") the pressure and suction ports are opposite!

Unit dimensions and ordering code: dimensions in inches (millimeters)

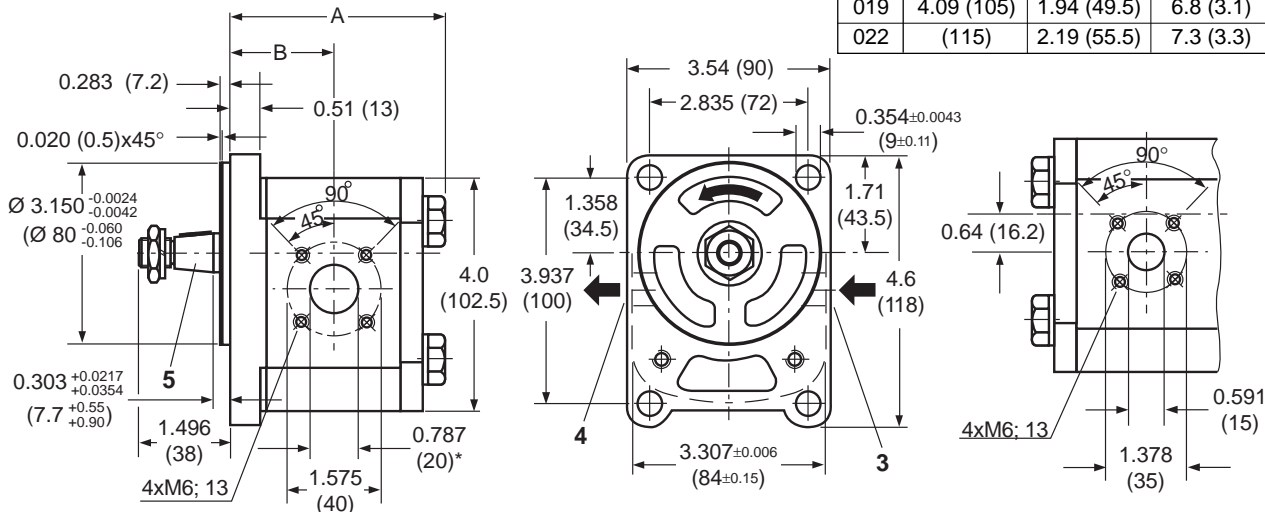
1 PF 2 G2-4X/... R C 20 MB

Size (see table)

Direction of rotation:
 Clockwise = R
 Counter-clockwise = L

Tapered shaft
 1: 5; Ø 17 mm

Size	Dimensions in inches (mm)		Weight lbs (kg)
	A	B	
004	3.43 (87)	1.59 (40.5)	5.3 (2.4)
005	3.43 (87)	1.59 (40.5)	5.5 (2.5)
008	3.58 (91)	1.70 (43.25)	5.7 (2.6)
011	3.84 (97.5)	1.87 (47.5)	5.9 (2.7)
016	3.98 (101)	1.87 (47.5)	6.4 (2.9)
019	4.09 (105)	1.94 (49.5)	6.8 (3.1)
022	(115)	2.19 (55.5)	7.3 (3.3)



* Ø (15) dia. in sizes 4 and 5

Direction of rotation: counter-clockwise (model "L") viewed from end of drive shaft. For clockwise rotation (model "R") the pressure and suction ports are opposite!

3 Suction side **5** Taper 1 : 5; Ø 17 mm
4 Pressure side (see page 5)

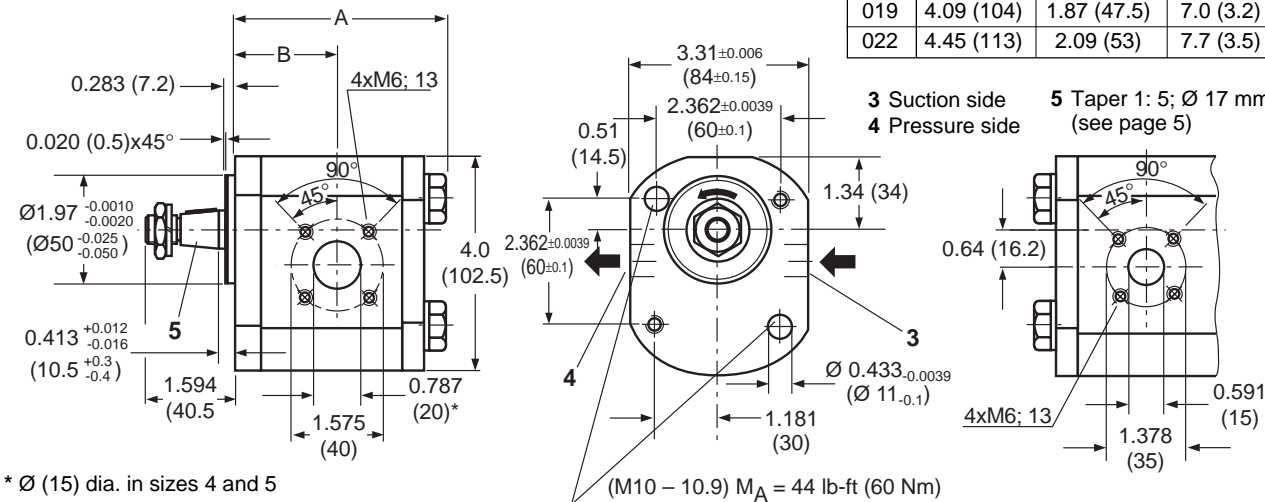
1 PF 2 G2-4X/... R C 20 KP

Size (see table)

Direction of rotation:
 Clockwise = R
 Counter-clockwise = L

Tapered shaft
 1: 5; Ø 17 mm

Size	Dimensions in inches (mm)		Weight lbs (kg)
	A	B	
004	3.35 (85)	1.52 (38.5)	5.9 (2.7)
005	3.35 (85)	1.52 (38.5)	5.9 (2.7)
008	3.48 (88.5)	1.60 (40.75)	6.1 (2.8)
011	3.74 (95)	1.77 (45)	6.6 (3.0)
016	3.90 (99)	1.75 (44.5)	6.6 (3.0)
019	4.09 (104)	1.87 (47.5)	7.0 (3.2)
022	4.45 (113)	2.09 (53)	7.7 (3.5)



* Ø (15) dia. in sizes 4 and 5

Direction of rotation: counter-clockwise (model "L") viewed from end of drive shaft. For clockwise rotation (model "R") the pressure and suction ports are opposite!

3 Suction side **5** Taper 1 : 5; Ø 17 mm
4 Pressure side (see page 5)

$M_A =$ Mounting Bolt Torque in lb-ft (Nm)

Unit dimensions and ordering code: dimensions in inches (millimeters)

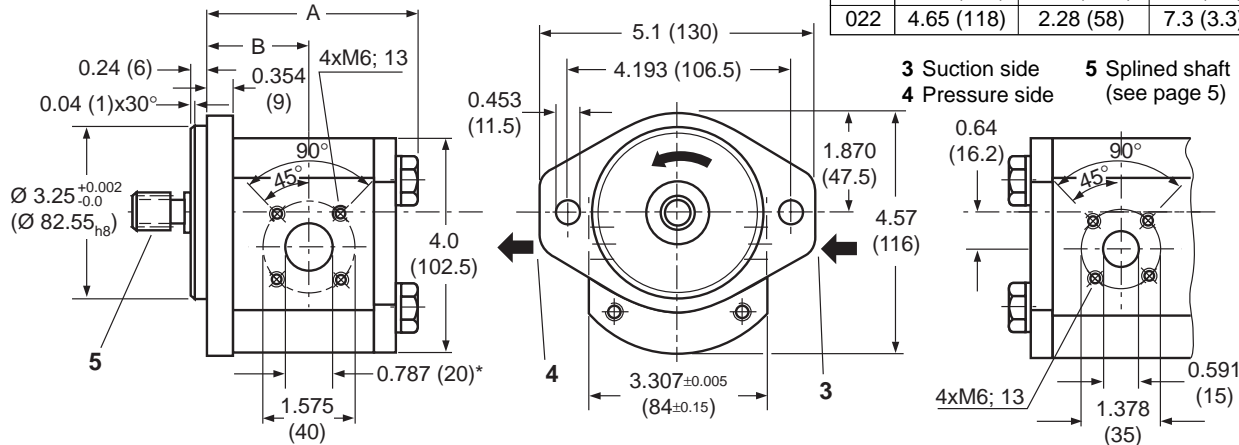
1 PF 2 G2-4X/... R L R 20 MR¹

Size (see table) For SAE threaded ports see page 2.

Direction of rotation:
 Clockwise = R
 Counter-clockwise = L

Splined shaft
 5/8" SAE-A
 9 teeth

Size	Dimensions in inches (mm)		Weight lbs (kg)
	A	B	
004	3.58 (91)	1.75 (44.5)	5.7 (2.6)
005	3.58 (91)	1.75 (44.5)	5.7 (2.6)
008	3.68 (93.5)	1.80 (45.75)	6.1 (2.8)
011	3.86 (98)	1.89 (48)	6.4 (2.9)
016	4.13 (105)	2.03 (51.5)	6.8 (3.1)
019	4.29 (109)	2.11 (53.5)	7.0 (3.2)
022	4.65 (118)	2.28 (58)	7.3 (3.3)



* Ø (15) dia. in sizes 4 and 5

¹ Envelope dimensions for this model pump correspond to 1PF2G2-4X/... RR12MR, however, with port code "12" (See page 2)

Direction of rotation: counter-clockwise (model "L") viewed from end of drive shaft. For clockwise rotation (model "R") the pressure and suction ports are opposite!

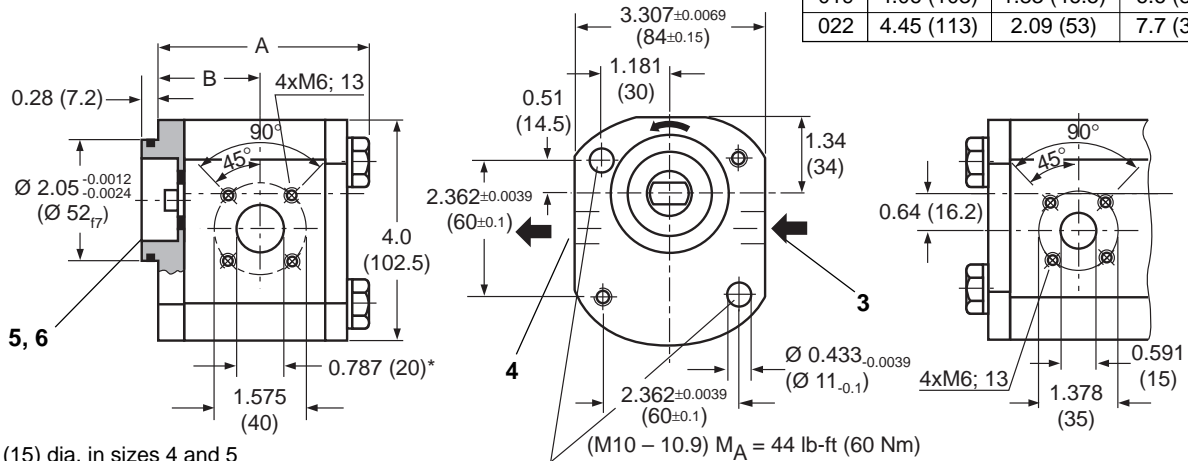
1 PF 2 G2-4X/... R L N 20 MM

Size (see table)

Direction of rotation:
 Clockwise = R
 Counter-clockwise = L

Tapered shaft
 1: 5; Ø 17 mm

Size	Dimensions in inches (mm)		Weight lbs (kg)
	A	B	
004	3.31 (84)	1.48 (37.5)	5.7 (2.6)
005	3.35 (85)	1.52 (38.5)	5.7 (2.6)
008	3.48 (88.5)	1.60 (40.75)	5.9 (2.7)
011	3.74 (95)	1.77 (45)	6.6 (3.0)
016	3.90 (99)	1.79 (45.5)	6.6 (3.0)
019	4.06 (103)	1.83 (46.5)	6.6 (3.0)
022	4.45 (113)	2.09 (53)	7.7 (3.5)



* Ø (15) dia. in sizes 4 and 5

Direction of rotation: counter-clockwise (model "L") viewed from end of drive shaft

For clockwise rotation (model "R") the pressure and suction ports are opposite!

Warning: In sizes 19 and 22, the pressure is reduced due to torque limitation (see page 3).

M_A = Mounting Bolt Torque in lb.ft (Nm)

3 Suction side
 4 Pressure side
 5 Tapered shaft with coupling (see page 5)
 6 Pump without shaft seal

Unit dimensions and ordering code: dimensions in inches (millimeters)

1 PF 2 G2-4X/... R S 20 MA

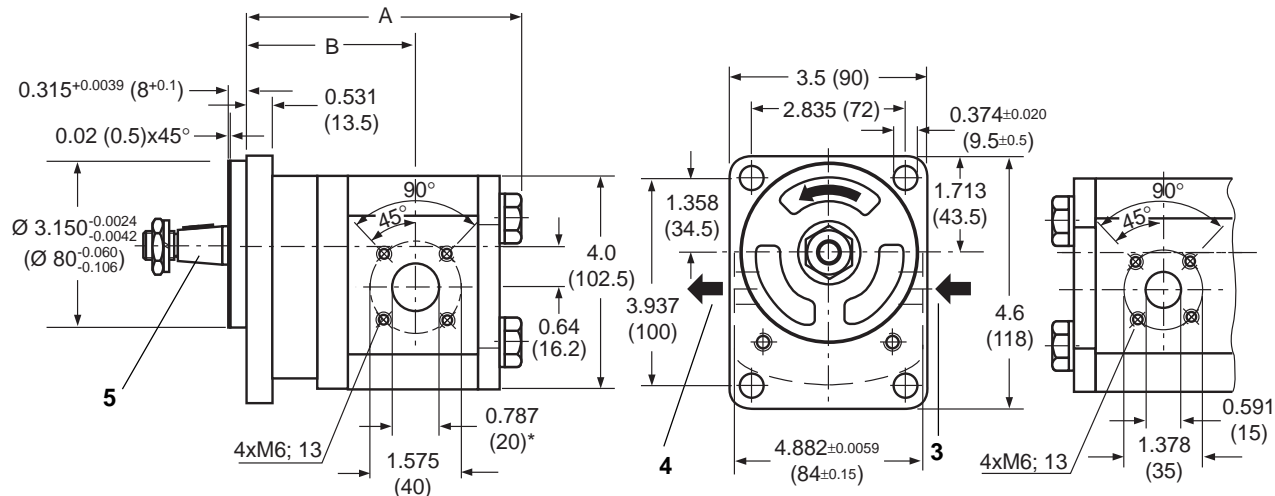
Size (see table)

Direction of rotation:
 Clockwise = R
 Counter-clockwise = L

Tapered shaft
 1: 5; Ø 17 mm

Size	Dimensions in inches (mm)		Weight lbs (kg)
	A	B	
004	4.57 (116)	2.74 (69.5)	7.4 (3.4)
005	4.61 (117)	2.77 (70.5)	7.4 (3.4)
008	4.74 (120.5)	2.86 (72.75)	7.7 (3.5)
011	5.00 (127)	3.03 (77)	8.3 (3.8)
016	5.16 (131)	3.05 (77.5)	8.3 (3.8)
019	5.32 (135)	3.09 (78.5)	8.3 (3.8)
022	5.71 (145)	3.35 (85)	9.4 (4.3)

Pump with additional front bearing to support radial and axial forces (see below)



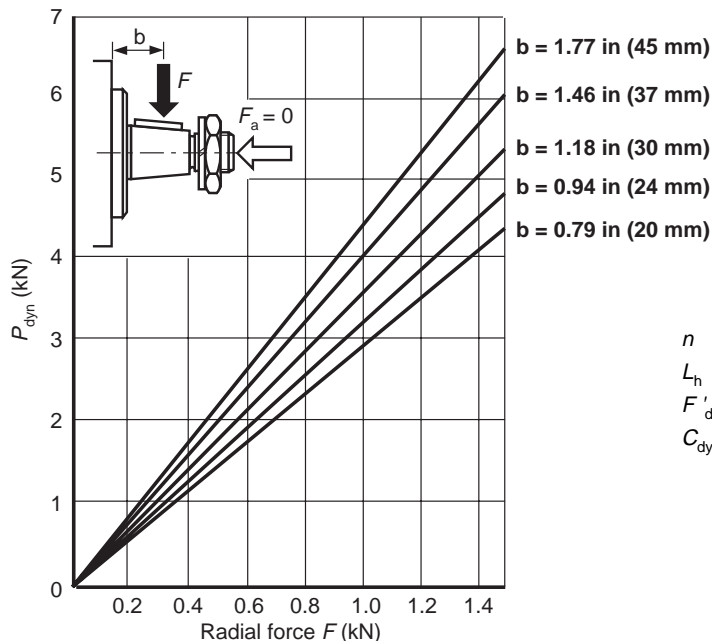
* Ø (15) dia. in sizes 4 and 5

Direction of rotation: counter-clockwise (model "L") viewed from end of drive shaft
 For clockwise rotation (model "R") the pressure and suction ports are opposite!

Warning: In sizes 19 and 22, the pressure is reduced due to torque limitation (see page 3).

3 Suction side
4 Pressure side
5 Taper 1: 5; Ø 20 mm (see page 5)

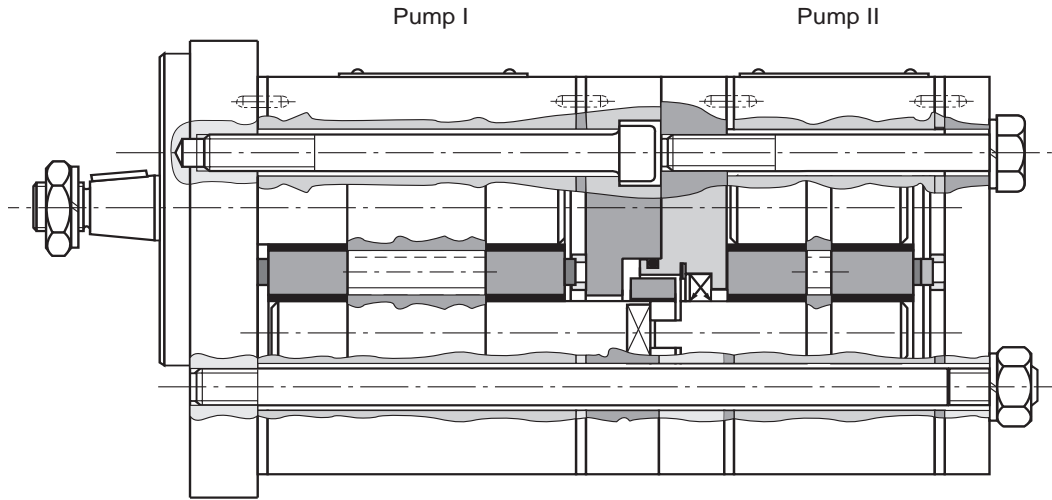
Extra front bearing, life calculations



$$L_h = \frac{10^6}{n \cdot 60} \left(\frac{C_{dyn}}{F'_{dyn}} \right)^3$$

n = Speed in rpm
 L_h = Theoretical bearing life in hours
 F'_{dyn} = Equivalent dynamic radial load
 C_{dyn} = Dynamic load factor, 21.2 kN

Tandem Gear Pump Model G2 + G2, Series 4X



Example: 1 PF 2 G2-4X/008 RC 20 MRK + 1 PF 2 G2-4X/004 LN 20 MDL

Technical data (for operation outside these parameters, please consult us!)

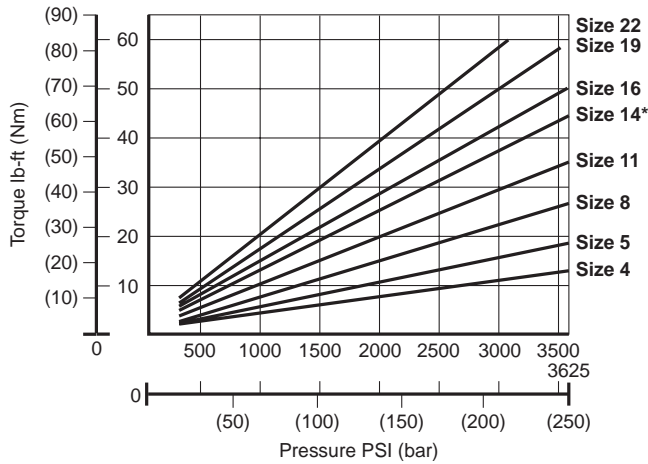
– The data for single pumps is also applicable to tandem pumps (see page 3)

Weights: see table for individual pumps.

The parts to complete the combination weigh 0.9 lbs (+ 0.4 kg)

For tandem pumps, please note the following:

- Pump size 4 may not be a front pump
- Pump I should consume greater power (pressure x volume) than pump 2
- Individual pumps are separated by a shaft seal and may draw from separate tanks
- The torque transmitted by the drive shafts and the coupling is limited as below
- When designing multiple pump assemblies, the sum of the permissible torques must not be exceeded



Permissible torque on the drive shaft:

- R** = Splined shaft SAE-A 5/8" $T = 81 \text{ lb-ft (110 Nm)}$
- C** = Tapered shaft 1: 5 Ø 17 mm $T = 110 \text{ lb-ft (150 Nm)}$
- Coupling between pump 1 and 2 $T = 51 \text{ lb-ft (70 Nm)}$

* Size 14 - special order, only on request

Unit dimensions and ordering code: dimensions in inches (millimeters)

1 PF 2 G2-4X/... ^R C 20 MBK
^L
 1 PF 2 G2-4X/... ^R N 20 MDL

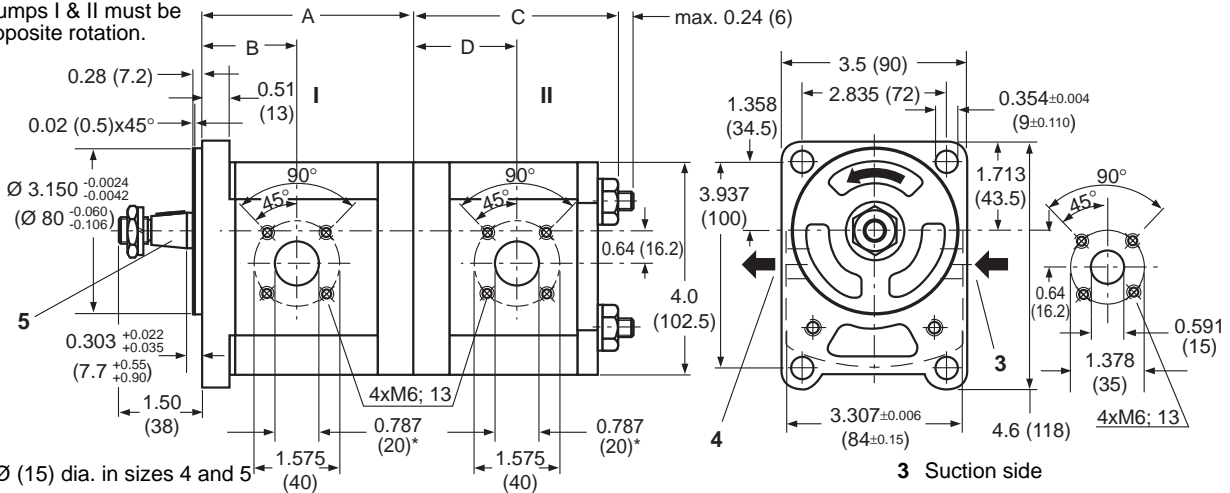
Size (see table)

Direction of rotation:

Clockwise = R
 Counter-clockwise = L

Size	Dimension				Weight in lbs (kg)	
	A	B	C	D	MBK	MDL
004	-	-	3.48 (88.5)	1.65 (42)	6.8 (3.1)	5.7 (2.6)
005	3.29 (83.5)	1.59 (40.5)	3.48 (88.5)	1.65 (42)	7 (3.2)	5.7 (2.6)
008	3.45 (87.5)	1.70 (43.25)	3.58 (91)	1.70 (43.25)	7.2 (3.3)	5.9 (2.7)
011	3.70 (94)	1.87 (47.5)	3.76 (95.5)	1.79 (45.5)	7.7 (3.5)	6.6 (3.0)
016	3.84 (97.5)	1.87 (47.5)	4.03 (102.5)	1.93 (49)	7.9 (3.6)	6.6 (3.0)
019	4.0 (101.5)	1.95 (49.5)	4.19 (106.5)	2.01 (51)	7.9 (3.6)	6.6 (3.0)
022	4.49 (114)	2.19 (55.5)	4.55 (115.5)	2.19 (55.5)	8.8 (4.0)	7.7 (3.5)

Pumps I & II must be opposite rotation.



* Ø (15) dia. in sizes 4 and 5

Direction of rotation: counter-clockwise (model "L") viewed from end of drive shaft
 For clockwise rotation (model "R") the pressure and suction ports are opposite!

Warning: In sizes 19 and 20, the pressure is reduced due to torque limitation (see page 3).

- 3 Suction side
- 4 Pressure side (the same for both pumps when assembled)
- 5 Taper 1: 5; Ø 17 (see page 5)

1 PF 2 G2-4X/... ^R C 20 MPK
^L
 1 PF 2 G2-4X/... ^R N 20 MDL

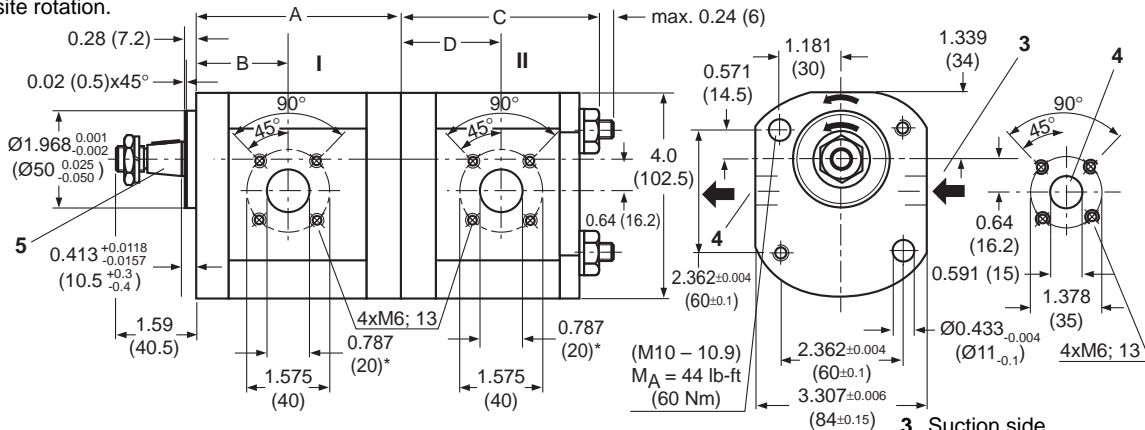
Size (see table)

Direction of rotation:

Clockwise = R
 Counter-clockwise = L

Size	Dimension				Weight in lbs (kg)	
	A	B	C	D	MBK	MDL
004	-	-	3.48 (88.5)	1.65 (42)	5.9 (2.7)	5.7 (2.6)
005	3.21 (81.5)	1.52 (38.5)	3.48 (88.5)	1.65 (42)	5.9 (2.7)	5.7 (2.6)
008	3.35 (85)	1.60 (40.75)	3.58 (91)	1.70 (43.25)	6.1 (2.8)	5.9 (2.7)
011	3.60 (91.5)	1.77 (45)	3.87 (95.5)	1.79 (45.5)	6.6 (3.0)	6.6 (3.0)
016	3.72 (94.5)	1.75 (44.5)	4.03 (102.5)	1.93 (49)	6.6 (3.0)	6.6 (3.0)
019	3.92 (99.5)	1.87 (47.5)	4.19 (106.5)	2.01 (51)	7.0 (3.2)	6.6 (3.0)
022	4.39 (111.5)	2.09 (53)	4.55 (115.5)	2.19 (55.5)	7.7 (3.5)	7.7 (3.5)

Pumps I & II must be opposite rotation.



* Ø (15) dia. in sizes 4 and 5

Direction of rotation: counter-clockwise (model "L") viewed from end of drive shaft
 For clockwise rotation (model "R") the pressure and suction ports are opposite!

M_A = Mounting Bolt Torque in lb.ft (Nm)

- 3 Suction side
- 4 Pressure side (the same for both pumps when assembled)
- 5 Taper 1: 5; Ø 17 (see page 5)

Unit dimensions and ordering code: dimensions in inches (millimeters)

1 PF 2 G2-4X/... ^R _L RR 20 MRK¹
 1 PF 2 G2-4X/... ^L _R LN 20 MDL

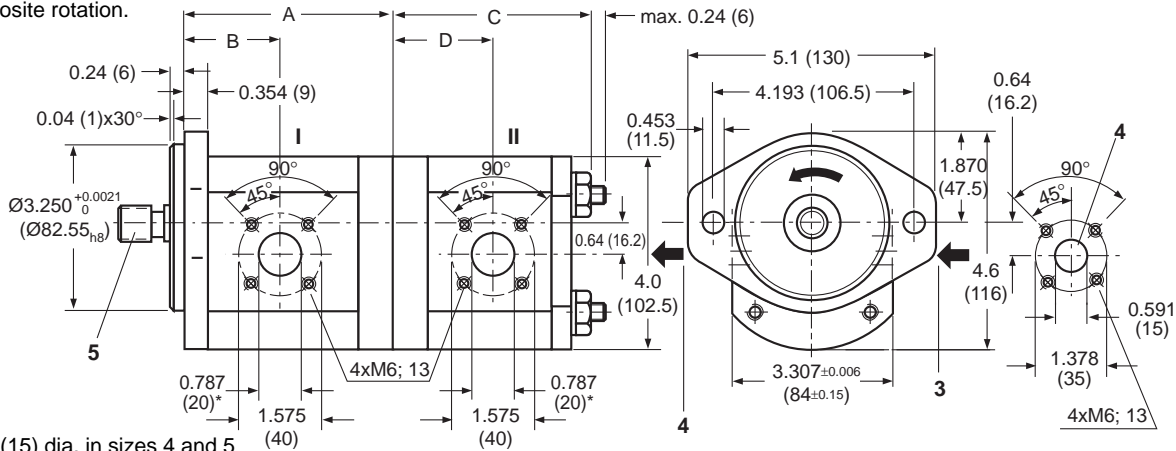
Size (see table)

Direction of rotation:

Clockwise = R
 Counter-clockwise = L

Pumps I & II must be opposite rotation.

Size	Dimension				Weight in lbs (kg)	
	A	B	C	D	KBK	MDL
004	—	—	3.48 (88.5)	1.65 (42)	5.7 (2.6)	5.7 (2.6)
005	3.45 (87.5)	1.75 (44.5)	3.48 (88.5)	1.65 (42)	5.7 (2.6)	5.7 (2.6)
008	3.54 (90)	1.80 (45.75)	3.58 (91)	1.70 (43.25)	6.1 (2.8)	5.9 (2.7)
011	3.72 (94.5)	1.88 (48)	3.76 (95.5)	1.79 (45.5)	6.4 (2.9)	6.6 (3.0)
016	4 (101.5)	2.03 (51.5)	4.04 (102.5)	1.93 (49)	6.8 (3.1)	6.6 (3.0)
019	4.15 (105.5)	2.11 (53.5)	4.19 (106.5)	2.01 (51)	7.0 (3.2)	6.6 (3.0)
022	4.59 (116.5)	2.28 (58)	4.55 (115.5)	2.19 (55.5)	7.2 (3.3)	7.7 (3.5)



* Ø (15) dia. in sizes 4 and 5

¹ Envelope dimensions for this model pump correspond to those for combination type 1PF2G2-4X/... RR12MRK + 1PF2G2-4X/..., however, with port code "12" (see page 7).

Direction of rotation: counter-clockwise (model "L") viewed from end of drive shaft
 For clockwise rotation (model "R") the pressure and suction ports are opposite!

3 Suction side

4 Pressure side (the same for both pumps when assembled)

5 Taper 1: 5; Ø 17 (see page 5)

1 PF 2 G2-4X/... RC 20 MBK
 1 PF 2 G2-4X/... LN 20 MDN
 1 PF 2 G2-4X/... LN 20 MDL

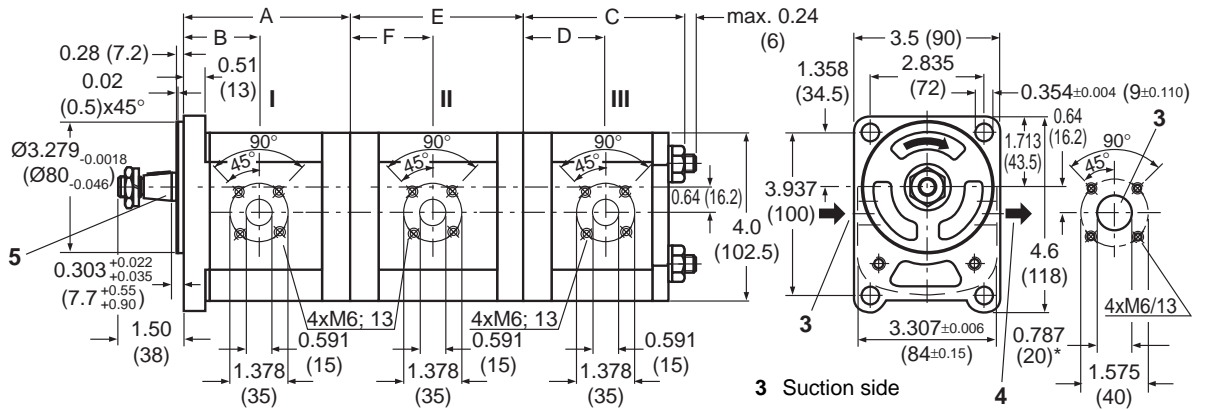
Size (see table)

Direction of rotation:

Clockwise = R
 Counter-clockwise = L

Note: Pumps II & III are ordered opposite rotation as pump I (porting appears on the same side of all three pumps when assembled).

Size	Dimension						Weight in lbs (kg) MDN
	A	B	E	F	C	D	
004	—	—	—	—	3.48 (88.5)	1.65 (42)	—
005	3.29 (83.5)	1.59 (40.5)	3.35 (85)	1.65 (42)	3.48 (88.5)	1.65 (42)	5.7 (2.6)
008	3.45 (87.5)	1.70 (43.25)	—	—	3.58 (91)	1.70 (43.25)	—
011	3.70 (94)	1.87 (47.5)	3.62 (92)	1.79 (45.5)	3.76 (95.5)	1.79 (45.5)	6.6 (3.0)
016	3.84 (97.5)	1.87 (47.5)	3.90 (99)	1.93 (49)	4.04 (102.5)	1.93 (49)	6.6 (3.0)
019	4 (101.5)	1.95 (49.5)	—	—	4.19 (106.5)	2.01 (51)	—
022	4.49 (114)	2.19 (55.5)	4.49 (114)	2.19 (55.5)	4.55 (115.5)	2.19 (55.5)	7.7 (3.5)



* Ø (15) dia. in sizes 4 and 5

3 Suction side

4 Pressure side (the same for both pumps when assembled)

5 Splined shaft (see page 5)

Unit dimensions and ordering code: dimensions in inches (millimeters)

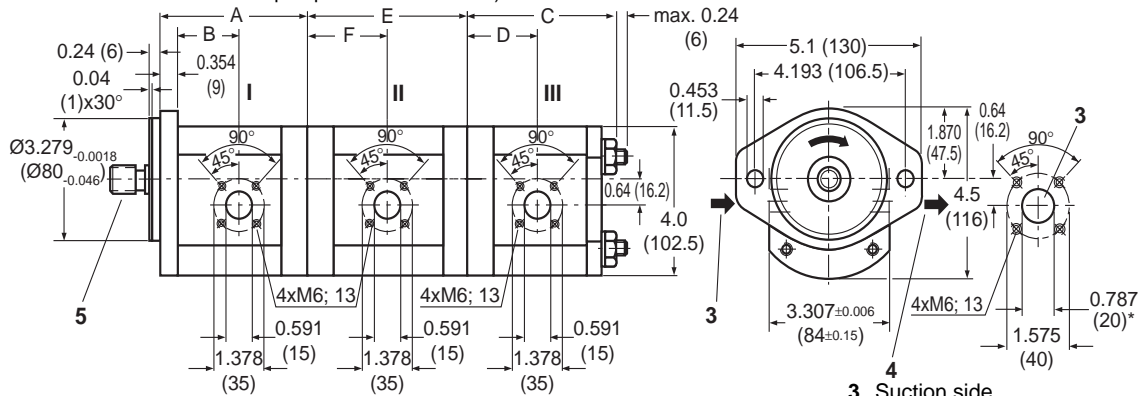
Size	Dimension						Weight in lbs (kg) MDN
	A	B	E	F	C	D	
004	—	—	—	—	3.48 (88.5)	1.65 (42)	—
005	3.45 (87.5)	1.75 (44.5)	3.35 (85)	1.65 (42)	3.48 (88.5)	1.65 (42)	5.7 (2.6)
008	3.54 (90)	1.80 (45.75)	—	—	3.58 (91)	1.70 (43.25)	—
011	3.72 (94.5)	1.88 (48)	3.62 (92)	1.79 (45.5)	3.76 (95.5)	1.79 (45.5)	6.6 (3.0)
016	4 (101.5)	2.03 (51.5)	3.90 (99)	1.93 (49)	4.04 (102.5)	1.93 (49)	6.6 (3.0)
019	4.15 (105.5)	2.11 (53.5)	—	—	4.19 (106.5)	2.01 (51)	—
022	4.59 (116.5)	2.28 (58)	4.49 (114)	2.19 (55.5)	4.55 (115.5)	2.19 (55.5)	7.7 (3.5)

1 PF 2 G2-4X/... RR 20 MRK
 1 PF 2 G2-4X/... LN 20 MDN
 1 PF 2 G2-4X/... LN 20 MDL

Size (see table)

Direction of rotation:
 Clockwise = R
 Counter-clockwise = L

Note: Pumps II & III are ordered opposite rotation as pump I (porting appears on the same side of all three pumps when assembled).



* Ø (15) dia. for sizes 4 and 5

¹ Envelope dimensions for this model pump correspond to those for combination type 1PF2G2-4X/... RR12MRK + 1PF2G2-4X/..., however, with port code "12" (see page 7).

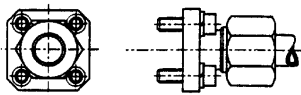
- 3 Suction side
- 4 Pressure side
(the same for three pumps when assembled)
- 5 Splined shaft (see page 5)

Seal kits (Buna-N)

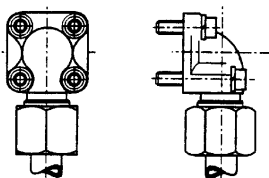
Pump type (all sizes)	Part No. Seal kit	Part No. Shaft seal	Pump type (all sizes)	Part No. Seal kit	Part No. Shaft seal
1 PF 2 G2-4X/...C 20 MB	RR00 309 401	RR00 001 855	1 PF 2 G2-4X/...C 20 MBK	RR00 309 401	RR00 001 855
1 PF 2 G2-4X/...C 20 KP	RR00 309 402	RR00 013 133 (FPM)	1 PF 2 G2-4X/...C 20 KPK	RR00 309 402	RR00 013 133 (FPM)
1 PF 2 G2-4X/...R 20 MR	RR00 309 401	RR00 001 855	1 PF 2 G2-4X/...R 20 MRK	RR00 309 401	RR00 001 855
1 PF 2 G2-4X/...S 20 MA	RR00 309 403	RR00 180 116	1 PF 2 G2-4X/...N 20 MDL	RR00 309 401	RR00 001 855
1 PF 2 G2-4X/...N 20 MM	RR00 309 401	—	1 PF 2 G2-4X/...N 20 MDN	RR00 309 401	RR00 001 855

Flanged fittings for pipe connections, Code 20

Straight flanged fitting



Right angle flanged fitting



Suction side		Pressure side	
Pipe dia.	Ordering Code	Pipe dia.	Ordering code
15	321 433	10	321 436
18	321 434	12	321 437
22	321 435	15	321 438
28	321 437	16	321 435

Suction side		Pressure side	
Pipe dia.	Ordering Code	Pipe dia.	Ordering code
15	321 433	10	321 436
18	321 434	12	321 437
22	321 435	15	321 438
28	321 437	16	321 435

All fittings are supplied complete with fixing screws, O-Ring, cutting ring and retaining nut

Notes:



Mannesmann Rexroth Corporation
Rexroth Hydraulics Div., Industrial, 2315 City Line Road, Bethlehem, PA 18017-2131 Tel. (610) 694-8300 Fax: (610) 694-8467
Rexroth Hydraulics Div., Mobile, 1700 Old Mansfield Road, Wooster, OH 44691-0394 Tel. (330) 263-3400 Fax: (330) 263-3333